

Appl. No. : 10/670,754
Filed : September 24, 2003

AMENDMENTS TO THE SPECIFICATION

Please replace numbered paragraph [0003] at page 1 with the following rewritten paragraph:

--[0003] The present invention relates generally to the field of micro-electronics. More particularly, this invention relates to the formation of porous silicon layers (PSL) and its their lift-off in the manufacture of Silicon On Insulator (SOI) structures in the fabrication of photovoltaic cells.--

Please replace numbered paragraph [0006] at page 2 with the following rewritten paragraph:

--[0006] In general, Figures 1A, 1B, 1C, 1D, 1E, and 1F illustrate a prior art technique for the formation of a porous layer and its separation from the substrate. Generally, the formation and transfer of PSLs to other substrates involve the following steps:

- Formation in a silicon substrate 1 of a low porosity layer 2 on the surface and a high porosity layer 3 thereunder by anodisation of silicon in hydrofluoric acid by changing the current density during the PSL formation.
- Formation of a separation layer under the high porosity layer by high temperature annealing in hydrogen. This separation layer is a highly porous layer and is mechanically very weak. It can easily be broken by little mechanical force, e.g. by ultrasonic treatment or pulling.
- Bonding of the obtained structure to another substrate using an adhesive.--

Please replace numbered paragraph [0026] at page 5 with the following rewritten paragraph:

--[0026] Embodiment(s) of the invention is are described by reference to examples 1 to 4. The example 1 describes the set-up used for the porous silicon formation. Porous silicon formation and its separation from the reusable substrate by electrochemical etching are described in the example 2. A Fformation mechanism of a separation layer or a detached layer is described in the example 3. In example 4, the electrochemical reaction is limited by the fluoride ions in the solution, known as electro-polishing. The combination of electrochemical etching and electro-polishing with certain conditions can be used for the PSL and its separation from the reusable substrate.--

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Please replace the Table 1 at page 10 after numbered paragraph [0042] with the following replacement table, wherein the data bars are correctly aligned:

	Sample No:	Sample surface history (number of lift-off)					Final surface treatment	AFM surface roughness RMS (nm)
		1	2	3	4	5		
OSS method	O1						PS formation on polished surface	0.33
	O2	██████████					-	12.38
	O3	████					Porous silicon formation	13.50
	O4	██████					-	15.24
	O5	██████████					-	24.21
	O6	██████████					-	18.67
TSS method	T1	████					-	4.09

Please replace numbered paragraph [0051] at page 13 with the following rewritten paragraph:

--[0051] Another apparatus for the continuous production of thin film is depicted in Fig. 7, similar to the one of Fig. 6. Here the ingot 30 is introduced into the HF bath from the top surface 50, such that the lifted off films 40 are automatically separate removed from the ingot 30 caused by the force of downward gravity 52, thereby allowing and the formation of the next film.--

Please replace the abstract with the following rewritten abstract (a clean version of the replacement abstract is enclosed on a separate sheet):

--A method and apparatus for slicing a semiconductor substrate. In one embodiment, the invention allows repetitive etching of a surface of the semiconductor substrate with a time dependent concentration of [[F-]] fluorine ions and a time dependent current I, such that multiple porous layers are obtained. The porous layer is removed released, and the released porous layer is removed from the surface of the substrate. The surface roughness of the porous layer is maintained within an acceptable or desired level of roughness value. The invention also provides an apparatus including a container having an etching solution. The semiconductor substrate may be protected by a tube covering at least a portion of said semiconductor substrate from said etching solution. The rate of insertion of said semiconductor substrate into the container is

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controlled to synchronize the lift-off with the insertion of the correct thickness of the semiconductor substrate. The anodising current is provided between two electrodes during operation.--